

WHAT IS CLAIMED IS:

1. An image reading system comprising:

5 photoelectric conversion means for photoelectrically converting images photographed on film having a magnetic recording part, and for outputting an image signal;

10 retrieval means for retrieving information recorded on the magnetic recording part, and for outputting a retrieval signal containing display information;

15 control means for outputting said image signal to a display means and for displaying a thumbnail display of a plurality of images on the display means, said control means outputting said retrieval signal containing said display information to the display means.

20 2. The image reading system of claim 1, wherein the display information is positioned below each film frame in the thumbnail display.

25 3. The image reading system of claim 1, wherein the display information is positioned to the side of each film frame in the thumbnail display.

4. The image reading system of claim 1, wherein the display information is positioned above each film frame in the thumbnail display.

25 5. The image reading system of claim 1, wherein the display means includes a thumbnail display unit that displays the thumbnail display of the plurality of images, the display means further including a display information display unit that displays the display information, the thumbnail display unit being separate from the display information display unit.

30 6. The image reading system of claim 1, wherein the display information includes at least one of a photograph frame number and a date of photography.

35 7. The image reading system of claim 1, wherein the display information includes image orientation information, and the control means orients a frame of the thumbnail display in a vertical direction on the display

means based on said image orientation information when indicating a vertical position photograph, and the control means also orients a frame of the thumbnail display in a horizontal direction based on said image orientation information when indicating a horizontal position photograph.

8. The image reading system of claim 1, wherein the display information includes photograph size information, and the control means displays a trimmed image on the display means based on the photograph size information.

9. An image reading device capable of reading images photographed on film with a magnetic recording part, said device having a recording device that records film identification information on the magnetic recording part.

10. An image reading system comprising:
photoelectric conversion means for photoelectrically converting images photographed on film having a magnetic recording part, and for outputting an image signal;
retrieval means for retrieving information recorded on the magnetic recording part, and for outputting a retrieval signal containing display information;

a memory; and
control means for outputting said image signal to the memory and for outputting said retrieval signal to the memory.

11. An image reading system connectable to external display means, said system comprising:
photoelectric conversion means for photoelectrically converting images photographed on film having a magnetic recording part, and for outputting an image signal;

retrieval means for retrieving information recorded on the magnetic recording part, and for outputting a retrieval signal;

frame number designation operation means for outputting a frame number designating signal;

supply means for supplying film; and

control means for driving the supply means to a frame corresponding to the frame number designating signal for creating a thumbnail display of a plurality of images on the display means by outputting to the display means said image signal obtained from the photoelectric conversion means, and for displaying information relating to the retrieval signal adjacent the thumbnail display on the display means.

5 12. An image input device comprising:

a mounting unit to mount a cartridge on which an original is wound;

10 15 an extractor mechanism to remove said original from said cartridge;

illumination means for illuminating said original;

a projection lens to project an illuminated image of said original;

20 20 one-dimensional photoelectric conversion means having pixels arranged in a line for converting said illuminated image into an image signal;

a transport mechanism for transporting the original removed from said extractor mechanism; and

25 25 transport control means for controlling said transport mechanism so that said original stops at said line of said photoelectric conversion means.

30 13. The image input device of claim 12, further comprising magnetic reading means for reading a magnetic recording section of said original.

35 14. The image input device of claim 12, wherein said illumination means comprises a light emitting unit for each of the red, green and blue colors, wherein each said unit has pixels arranged in a line and said original stops at each said line.

15. The image input device of claim 12, wherein said transport control means controls said transport mechanism to stop at said line of said photoelectric

conversion means during transporting of said original in a first direction, and controls said transport mechanism to drive with a uniform velocity during transporting of said original in a second direction, the second direction being opposite from said first direction.

16. The image input device of claim 15, further comprising magnetic reading means to read a magnetic recording section of said original, wherein said magnetic reading means reads the magnetic recording section during transporting of the original in said second direction.

17. The image input device of claim 12, wherein said original comprises an image section with image data derived from said image signal and a section without image data, and wherein said transport control means controls said original to stop at each line of said photoelectric conversion means in said image section, and wherein said transport control means controls the transport mechanism to drive with a uniform velocity in said section without image data.

18. An image reading system for reading a film wound in a cartridge, said film including magnetic data and image data that are thumbnail displayed on a monitor upon prescanning, said system comprising:

an image output circuit to output the image data after receiving light passing through the image on the film;

a retrieval circuit to retrieve the magnetic data;

30 a first memory circuit to store the image data from a plurality of frames, an amount of said image data of the plurality of frames being equivalent to an amount output from the image output circuit during prescanning;

35 a second memory circuit to store the magnetic data, an amount of said magnetic data being equivalent to an amount retrieved by the retrieval circuit during prescanning; and

an image processing circuit for processing the image data on the plurality of frames stored in the first memory circuit and for displaying the image data on the

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monitor based on the magnetic data stored in the second memory circuit.

19. The image reading system according to claim 18, wherein, in the case when the magnetic data stored in the second memory circuit is frame orientation data for the camera, the image data is displayed on the monitor according to the frame orientation data.

20. The image reading system according to claim 18, wherein, in the case when the magnetic data stored in the second memory circuit comprises shooting size data, the image data is displayed on the monitor according to the shooting size data.

21. The image reading system according to claim 18, wherein, in the case when the magnetic data stored in the second memory circuit includes shooting frame number data, the image data of all the frames is displayed on the monitor according to the shooting frame number data.

22. An image reading system for processing film having magnetic data and image data relating to each frame of the film, said system comprising:

an image output circuit that outputs the image data after receiving light passing through each image frame on the film;

a retrieval circuit that retrieves the magnetic data;

a magnetic recording circuit that stores the magnetic data retrieved by the retrieval circuit during prescanning;

an image memory circuit that stores the image data for each frame output from the image output circuit during prescanning; and

an image processing circuit that processes the image data of a frame stored in the image memory circuit and displays the image data on a monitor based on the magnetic data stored in the magnetic recording circuit.

23. An image reading system, comprising:

photoelectric conversion means for photoelectrically converting images and outputting an image signal;

5 feeding means for feeding film having frames having frame numbers recorded in a magnetic recording part;

detection means that detects the frames of the film;

10 a frame designating operation unit that designates at least one of the frames of the film and outputs a frame designation signal; and

15 control means for controlling the feeding means so that film is fed as far as a position where the photoelectric conversion means can read the film when a frame having the frame number corresponding to the frame designation signal is detected, and for controlling the photoelectric conversion means so that the image on the designated frame is photoelectrically converted into an image signal.

20 24. The image reading system of claim 23, wherein the frame designating operation unit has a frame number input unit so that frames of the film are designated by frame numbers.

25 25. The image reading system of claim 23, further comprising display means that performs image displays, wherein the control means outputs to the display means said image signal obtained from the photoelectric conversion means so that a plurality of images are displayed as a thumbnail display on the display means, wherein the frame designating operation unit designates frames of the film by designating images of the thumbnail display.

30 35 26. The image reading system of claim 23, wherein the control means controls driving of the feeding means so that the film is fed in descending order of frame number.

27. The image reading system of claim 23, wherein the control means controls driving of the feeding means so

that the film is driven in ascending order of frame number.

28. The image reading system of claim 23, wherein the control means controls driving of the feeding means so that the film is fed in the order designated by the frame designating operation unit.

5 29. An image reading system comprising:

10 photoelectric conversion means for photoelectrically converting images and outputting image signals;

image signal processing means for processing said image signals;

15 feeding means for feeding film having a plurality of recorded frame numbers;

detection means for detecting frames of the film;

a frame designating operation unit that designates at least one of the frames of the film, and that outputs a frame designation signal;

20 display means for performing image displays;

setting condition designating means for outputting a setting condition signal relating to the images; and

25 control means for driving the feeding means, for controlling the feeding means based on detections made by the detection means so that the film is fed to a position where the photoelectric conversion means can read the film, for driving the photoelectric conversion means and outputting a first image signal ^{for processing} to the photoelectric conversion means, for displaying an image display on the display means corresponding to the first image signal, for establishing processing conditions for the image signal processing means based on an established condition signal relating to the displayed image display, for driving the photoelectric conversion means and outputting a second image signal ^{for scanning} to the photoelectric conversion means, and for processing the second image signal in the image signal processing means based on the processing conditions.

30.. 30.. The image reading system of claim 29, wherein the film includes a magnetic recording part and the frame

5 detection means includes magnetic recording and retrieval means that at least one of conducts magnetic recording on the magnetic recording part and retrieves information recorded on the magnetic recording part, and wherein the control means controls the magnetic recording and retrieval means so that the established processing conditions are magnetically recorded on the magnetic recording part, the control means controlling the magnetic recording and retrieval means so that the processing conditions recorded on the magnetic recording part are retrieved when a frame corresponding to a frame number corresponding to the frame designating signal is detected by the detection means.

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15 31. The image reading system of claim 30, wherein the control means drives the magnetic recording and retrieval means after the processing conditions of the image signal processing means are established based on the first image output, and wherein the control means causes the established processing conditions to be recorded on the magnetic recording part.

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25 32. A picture image reading device that reads images on film having an image section including image data and a magnetic recording section including magnetic data, said film being wound and stored inside a cartridge, the picture image reading device comprising:

conveyor means for conveying the film;
conveyor control means for controlling the conveyor means during prescanning so that the film is conveyed at a constant speed;

30 retrieval means for retrieving the magnetic data when the film is conveyed at said constant speed by the conveyor control means; and

35 photoelectric conversion means for reading the image data and for converting the image data into image signals when the film is conveyed at said constant speed by the conveyor means.

33. The picture image reading device according to claim 32, wherein the retrieval means retrieves magnetic

data while the photoelectric conversion means outputs said image signals during the conveying of the film in a first direction by the conveyor means.

34. The picture image reading device according to
5 claim 32, wherein the retrieval means retrieves magnetic data during the conveying of the film in a first direction by the conveyor means, and the photoelectric conversion means outputs said image signals during the conveying of the film by the conveyor means in a second direction, the second direction being opposite from the first direction.

10 35. The picture image reading device according to
claim 34, wherein the conveyor control means controls the conveyor means so that the speed at which the conveyor means conveys the film in the second direction is slower than the speed at which the conveyor means conveys the film in the first direction.

15 36. A method for displaying photographic image and magnetic data, said method comprising:

20 photoelectrically converting images photographed on film having a magnetic recording part;

outputting an image signal;

25 retrieving information recorded on the magnetic recording part;

outputting a retrieval signal containing display information;

30 outputting said image signal to a display means to display a thumbnail display of a plurality of images on the display means; and

outputting said retrieval signal containing said display information to the display means.

35 37. A method for outputting image and magnetic data of a film, said method comprising:

photoelectrically converting images photographed on film having a magnetic recording part;

outputting an image signal;

retrieving information recorded on the magnetic recording part;

outputting a retrieval signal containing display information; and

outputting said image signal and said retrieval signal to a memory.

5 38. A method for displaying film on external display means, said method comprising:

photoelectrically converting images photographed on film having a magnetic recording part;

outputting image signals;

10 retrieving information recorded on the magnetic recording part;

outputting retrieval signals;

outputting a frame number designating signal;

supplying film with a supply means;

15 driving the supply means to a frame corresponding to the frame number designating signal for creating a thumbnail display of a plurality of images on the display means by outputting to the display means said image signals; and

20 displaying information relating to the retrieval signals adjacent each frame of the thumbnail display on the display means.

39. A method for controlling movement of an original wound on a cartridge, said method comprising:

25 removing said original from said cartridge;

illuminating said original;

projecting an illuminated image of said original;

30 converting said illuminated image into an image signal using a one-dimensional photoelectric converter having pixels arranged in a line; and

transporting the original removed from said cartridge so that said original stops at said line of said photoelectric converter.

40. A method for reading a film wound in a cartridge, said film including magnetic data and image data that are thumbnail displayed on a monitor upon prescanning, said method comprising:

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outputting the image data from an image output circuit after receiving light passing through the image on the film;

5 retrieving the magnetic data using a retrieval circuit;

storing the image data from a plurality of frames in a first memory circuit, an amount of said image data of the plurality of frames being equivalent to an amount output from the image output circuit during prescanning;

10 storing the magnetic data in a second memory circuit, an amount of said magnetic data being equivalent to an amount retrieved by the retrieval circuit during prescanning; and

15 processing the image data on the plurality of frames stored in the first memory circuit to display the image data on the monitor based on the magnetic data stored in the second memory circuit.

20 41. A method for processing film having magnetic data and image data relating to each frame of the film, said method comprising:

outputting the image data with an image output circuit after receiving light passing through each image frame on the film;

25 retrieving the magnetic data using a retrieval circuit;

storing the magnetic data retrieved by the retrieval circuit during prescanning using a magnetic recording circuit;

30 storing the image data for each frame output from the image output circuit during prescanning using an image memory circuit; and

35 displaying the image data on a monitor based on the magnetic data stored in the magnetic recording circuit by processing the image data of a frame stored in the image memory circuit.

42. A method for controlling movement of a film to a designated frame, said method comprising:

outputting an image signal using photoelectric conversion means;

feeding film having frames having frame numbers recorded in a magnetic recording part;

5 detecting means detecting the frames of the film;

outputting a frame designation signal using a frame designating operation unit that designates at least one of the frames of the film;

10 feeding the film to a position where the photoelectric conversion means can read the film when a frame having the frame number corresponding to the frame designation signal is detected; and

15 controlling the photoelectric conversion means so that the image on the designated frame is photoelectrically converted into an image signal.

43. A method for processing film through a system including photoelectric conversion means for photoelectrically converting images and outputting image signals, image signal processing means for processing said image signals, feeding means for feeding film having a plurality of recorded frame numbers, detection means for detecting frames of the film, a frame designating operation unit that designates at least one of the frames of the film, and that outputs a frame designation signal, display means for performing image displays, setting condition designating means for outputting a setting condition signal relating to the images, said method comprising:

30 driving the feeding means;

controlling the feeding means based on detections made by the detection means so that the film is fed to a position where the photoelectric conversion means can read the film;

35 driving the photoelectric conversion means and outputting a first image signal to the photoelectric conversion means;

displaying an image display on the display means corresponding to the first image signal;

establishing processing conditions for the image signal processing means based on an established condition signal relating to the displayed image display;

5 driving the photoelectric conversion means and outputting a second image signal to the photoelectric conversion means; and

processing the second image signal in the image signal processing means based on the processing conditions.

10 44. A method for reading images on film having an image section including image data and a magnetic recording section including magnetic data, said film being wound and stored inside a cartridge, the method comprising:

15 conveying the film with conveyor means;

controlling the conveyor means during prescanning with conveyor control means so that the film is conveyed at a constant speed;

20 retrieving the magnetic data with retrieval means when the film is conveyed at said constant speed by the conveyor control means; and

converting the image data into image signals with photoelectric conversion means when the film is conveyed at said constant speed by the conveyor means.

25 45. A method for processing a plurality of frames of a film, each frame having an image section and a magnetic section, said method comprising:

prescanning the image sections and the magnetic sections of the film;

30 simultaneously displaying a thumbnail display of said plurality of frames on a monitor;

selecting at least one frame from said thumbnail display for scanning; and

scanning said at least one selected frame.

35 46. A method for processing a plurality of frames of a film according to claim 45, wherein said prescanning and said scanning are conducted using a one-dimensional photoelectric converter.

47. A method for processing a plurality frames of a film according to claim 45, further comprising writing a magnetic identification number on the magnetic section of said at least one frame selected for scanning.

5 48. A method for processing a plurality of frames of a film according to claim 45, further comprising changing at least one photographic condition of at least one of said prescanned images before scanning.

10 49. A method for processing a plurality of frames of a film according to claim 45, further comprising displaying information relating to each magnetic section adjacent each of said plurality of frames displayed on the monitor.

15 50. A method for processing a plurality of frames of a film according to claim 45, wherein said prescanning step includes prescanning said image sections and prescanning said magnetic sections at a constant speed.

20 51. A method for processing a plurality of frames of a film according to claim 45, further comprising orienting each image in the thumbnail display in accordance with magnetic display information contained in each magnetic section of the film.